Public Service Company of New Mexico

PV Plus Battery for Simultaneous Voltage Smoothing and Peak Shifting

Project Description

Public Service Company of New Mexico and its partners co-located a 500kW/1MWh advanced lead acid battery with a separately installed 500kW solar photovoltaic (PV) plant to create a dispatchable distributed generation resource. This hybrid resource provides simultaneous voltage smoothing and peak shifting through advanced control algorithms and switches between two configurations, end-of-feeder and beginning-of-feeder. Data collection and analysis produce information for a wide range of applications including grid upgrade deferral. The project has also yielded modeling tools used to optimize battery system control algorithms and further the understanding of feeders with storage and distributed generation. The site is located in southeast Albuquerque.

Goals/Objectives

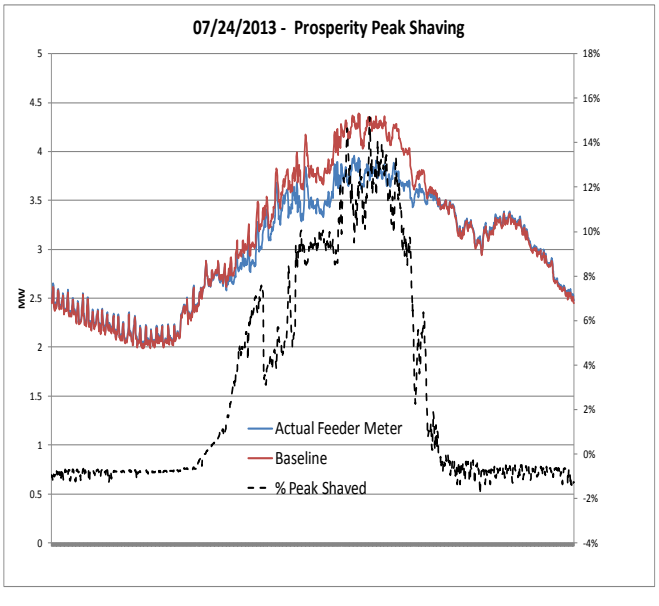
- Demonstrate that intermittent, renewables-based, distributed generation and storage can mitigate voltage-level fluctuations and enable peak shifting
- Quantify and refine performance requirements, operating practices, and costs associated with the use of advanced storage technologies
- Achieve 15 percent or greater peak-load reduction through a combination of substation-sited PV and storage

Key Milestones

- Battery Manufacture Completed (May 2011)
- Finalize System Control Strategy and Algorithms (May 2011)
- PV and battery system installed and field commissioned (August 2011)
- Demonstration and Final Report Complete (February 2014)

Benefits

- Job creation
- Electricity costs reduced
- Grid efficiency increased
- Energy security strengthened
- Next-generation utility system advancement
- Greenhouse gas emissions reduced



CONTACTS

Ronald Staubly
Project Manager
National Energy Technology Laboratory
3610 Collins Ferry Road
Morgantown, WV 26507-0880
304-285-4828
Ronald.Staubly@netl.doe.gov

Steve Willard
Principal Investigator
Public Service Company of New Mexico
414 Silver Avenue SW
Albuquerque, NM 87102-3289
505-241-2566
steve.willard@pnmresources.com

PARTNERS

University of New Mexico
Northern New Mexico College
Sandia National Laboratories
East Penn Manufacturing Company
Electric Power Research Institute

PROJECT DURATION

01/01/2010–04/30/2014

BUDGET

Total Project Value
$6,113,433

DOE/Non-DOE Share
$2,305,931/$3,807,502

EQUIPMENT

Advanced Lead Acid and Ultra Batteries from East Penn Manufacturing
S&C SMS Power Control System
Advanced Data Acquisition System

DEMONSTRATION STATES

New Mexico

CID: OE0000230

Managed by the National Energy Technology Laboratory for the Office of Electricity Delivery and Energy Reliability